

SMELT WORKING GROUP
Tuesday, January 20, 2015

Meeting Summary:

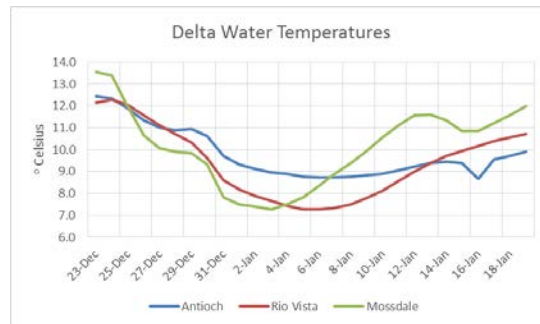
The Working Group described the risk of entrainment under a new Framework for Providing Advice to the Service. Under this framework the relative risk of entrainment for each of the three flow ranges is ranked and discussed:

-1250 to -2000 cfs has a low risk of entrainment, -2000 to -3500 cfs has a low risk of entrainment, and -3500 to -5000 cfs has a medium risk of entrainment. These relative risk levels are based on a variety of conditions, including but not limited to, lowest annual index on record, turbidity in south Delta slightly below threshold levels for smelt movement, confirmed Delta Smelt presence in central Delta, sporadic reduction in salvage efficiency due to debris loads, and comparable catch results for SKT for Sac River stations and Jersey Point.

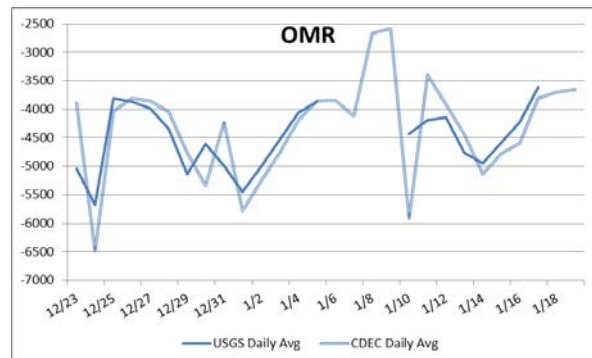
The Working Group will continue to monitor Delta Smelt survey and salvage data and Delta conditions and will meet again Monday, January 26, 2015 at 10am.

Reported Data:

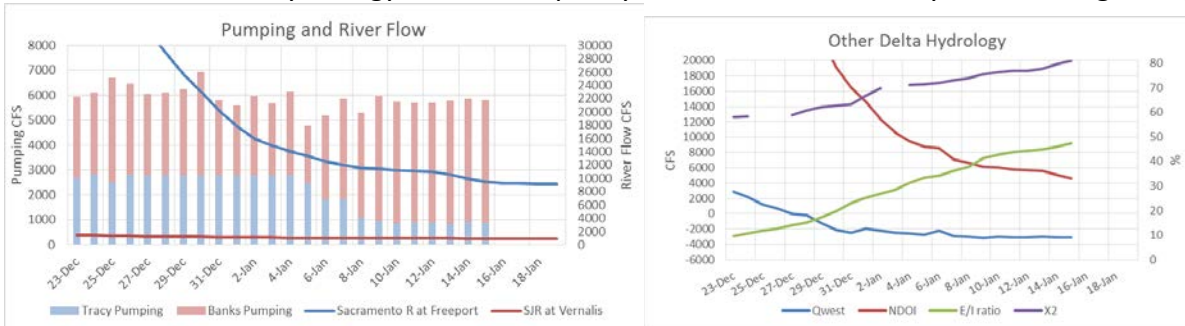
1. **Current environmental data:**
 - Water Temperatures are as follows:



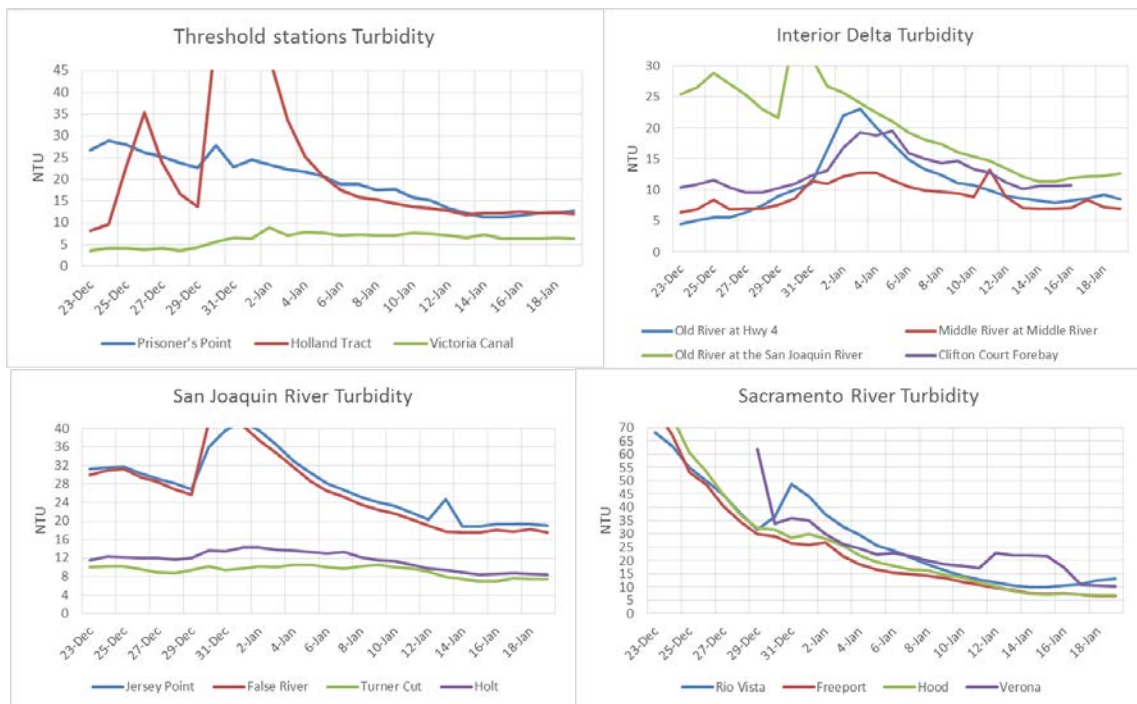
- OMR Flow: USGS tidally-averaged daily and 5 day average OMR flow for January 17 is -3610 and -4426 cfs, respectively. CDEC daily, 5 day average, and 14 day average OMR flow as of January 19 is -3649, -4105, and -4038 cfs



- River Flows: Sacramento River inflow is 9209 cfs and San Joaquin River is 876 cfs. X2 calculation from CDEC is upstream of 81 km. The graphs below show the most recent trends in Delta hydrology and water quality that were evaluated by the Working Group



- Turbidity:



2. Delta Fish Monitoring:

The 2014 Fall Midwater Trawl Annual Index for Delta Smelt 2014 is 9. This is the lowest fall index, and approximately one half of the previous lowest indices of 17 (2009) and 18 (2013).

Smelt Larva Survey #1 was in the field January 5 through 8. 32 out of 44 stations were sampled. No Delta Smelt have been observed in the processed samples, but none were expected this early in the year. A total of 63 Longfin Smelt were observed in samples taken from stations generally from the confluence and downstream. SLS #2 is in the field this week.

Spring Kodiak Trawl #1 was in the field last week. A total of 21 Delta Smelt were caught ranging in size

from 55 to 83 mm. Catch was relatively widespread, with comparable catch numbers at stations in the Sacramento River side as well as the lower San Joaquin River. Additional catch occurred at stations in the Montezuma Slough area.

The Service's Early Warning Study reported Delta Smelt catches at Jersey Point and Prisoner's Point. The Service has reduced sampling to one day per week at each location. There was no new catch information, as sampling data has not yet been distributed for this week.

3. Salvage:

No Delta Smelt salvage has occurred since January 7. The estimated cumulative seasonal total for adult Delta Smelt salvage remains at 56. No Longfin Smelt has been observed in salvage counts during WY2015. Salvage counts have returned to 30 minutes per 2 hours at the SWP. High debris loads at the CVP have caused some of the fish counts to be reduced sporadically on most days. Most of last week the Skinner Fish Facility operated two secondary channels into one of two collection buildings. After alerting the operators that this practice would reduce salvage efficiency, the SWP operators resumed using both fish collection building when using two secondary channels.

4. Expected Project Operations:

Combined SWP/CVP exports today are 4900 cfs. Operators indicated that the Index OMR value was anticipated to be approximately -4100 cfs in compliance with the January Outflow requirement for the SWRCB.

5. Delta Conditions Team:

Turbidity modeling was circulated to the group.

6. Assessment of Risk:

Background:

RPA Component 1: "Beginning in December of each year, the Service shall review data on flow, turbidity, salvage, and other parameters that have historically predicted the timing of Delta Smelt migration into the Delta. On an ongoing basis, and consistent with the parameters outlined... [in the BO]...the SWG shall recommend to the Service OMR flows that are expected to minimize entrainment of adult Delta Smelt" (page 280).

RPA Component 1, Action 1, Part B: "High-entrainment risk period: Delta Smelt have historically been entrained when first flush conditions occur in late December. In order to prevent or minimize such entrainment, Action 1 shall be initiated on or after December 20 if the 3 day average turbidity at Prisoner's Point, Holland Cut, and Victoria Canal exceeds 12 NTU, or if there are three days of Delta Smelt salvage at either facility or if the cumulative daily salvage count is above the risk threshold based upon the 'daily salvage index' approach described in Attachment B. Action 1 shall require the Projects to maintain OMR flows no more negative than -2,000 cfs (14-day running average) with a simultaneous 5-day running average flow no more negative than -2,500 cfs to protect adult Delta Smelt for 14 days. However, the SWG can recommend a delayed start or interruption based on other conditions such as delta inflow that may affect vulnerability to entrainment." (page 281).

RPA Component 1, Action 2: “An action implemented using an adaptive process to tailor protection to changing environmental conditions after Action 1. As in Action 1, the intent is to protect pre-spawning adults from entrainment and, to the extent possible, from adverse hydrodynamic conditions.”

“The range of net daily OMR flows will be no more negative than -1,250 to -5,000 cfs. Depending on extant conditions (and the general guidelines below) specific OMR flows within this range are recommended by the Working Group from the onset of Action 2 through its termination...” (page 352).

Discussion:

The Working Group reviewed and discussed all relevant data from Delta monitoring, salvage, field surveys, and planned Project operations. The Service introduced the **Framework for Providing Advice to the Service** at the January 12 meeting. Under this Framework, the Working Group is to evaluate the risk of entrainment relative to three ranges of OMR flow (-1250 to -2000 cfs, -2000 to -3500 cfs, and -3500 to -5000 cfs). Specific guidelines were provided to the Working Group in how to discuss the risk of entrainment under each flow range.

The Service presented its updated WY2015 adult Delta Smelt ITL (196 fish) at the January 12 meeting. The January 9, 2015 reinitiation memo regarding this new limit has been posted to the Bay-Delta FWO website (<http://www.fws.gov/sfbaydelta/>).

Turbidity has dropped slightly below 10 NTU throughout much of the southern Delta. Stations along the lower San Joaquin River generally remain at or above the threshold levels. Members noted that some Delta Smelt likely remain distributed throughout much of the south Delta and these fish continue to face an elevated risk of entrainment under current operations.

High debris loads have negatively impacted fish salvage efficiency. Although fish counts have mostly returned to the full 30 minutes per two hours, debris continues to sporadically reduce the already low probability of detecting Delta Smelt in salvage operations.

Fish surveys continue to detect Delta Smelt in the lower San Joaquin River. Catch per tow is generally comparable between stations in the Sacramento River system as well as Jersey Point. The Working Group is concerned that a large proportion of the population may be occurring in the lower San Joaquin River than in the past few years. The Working Group assumes there are Delta Smelt distributed throughout the central and southern Delta, based on survey results and salvage through January 7. The Working Group noted that there has been zero salvage of Delta Smelt since January 7, and there was some discussion on what that meant as far as distribution. Elsewhere in the Delta, Delta Smelt have been strongly surface oriented, so it is possible that fish will be more readily detected once debris loads decrease at the facilities and water hyacinth that had been clogging the SWP intake channel finishes clearing out, and the fish have a clear path to the salvage facilities.

The above discussion points influenced and contribute to all three flow ranges described below:

Framework for Advice OMR Level Risk Ranking and Discussion

- OMR flow of -1250 to -2000 cfs: There is a low risk of entrainment under this flow range. This is the most protective range for Delta Smelt this week.
 - Risk factors: lowest annual index on record, turbidity levels slightly below threshold

- levels for fish movement in south Delta, confirmed Delta Smelt presence in central Delta, sporadic reduction in salvage efficiency due to debris loads, comparable catch results for SKT for Sac River stations and Jersey Point
 - Salvage: geographic influence of the pumps is reduced to southern Delta under this flow range
 - Unknowns: Would expect Qwest to become more positive under this flow scenario.
 - Persistence of risk: N/A
- OMR flow of -2000 to -3500 cfs: There is a low risk of entrainment under this flow range, although some members indicated a medium risk of entrainment also was appropriate for this flow range.
 - Risk factors: lowest annual index on record, turbidity levels slightly below threshold levels in south Delta, confirmed Delta Smelt presence in central Delta, sporadic reduction in salvage efficiency due to debris loads, comparable catch results for SKT for Sac River stations and Jersey Point
 - Salvage: Observed salvage has been zero since January 8
 - Unknowns: future occurrence of high winds increasing turbidity levels could result in an increased risk of entrainment under this flow range.
 - Persistence of risk: N/A
- OMR flow of -3500 to -5000 cfs: There is a medium risk of entrainment under this flow range, although some members indicated this flow range could still be a high risk of entrainment.
 - Risk factors: lowest annual index on record, turbidity levels at threshold levels in south Delta, confirmed Delta Smelt presence in central Delta, sporadic reduction in salvage efficiency due to debris loads, comparable catch results for SKT for Sac River stations and Jersey Point
 - Salvage: Observed salvage has been zero since January 8
 - Unknowns: future occurrence of high winds increasing turbidity levels could result in an increased risk of entrainment under this flow range. Increased combined pumping could increase the risk of entrainment for this flow range.
 - Persistence of risk: level of risk for this flow range would be anticipated to remain for the week.

The Working Group will continue to monitor conditions and smelt distribution and will meet again on Monday, January 26, 2015.